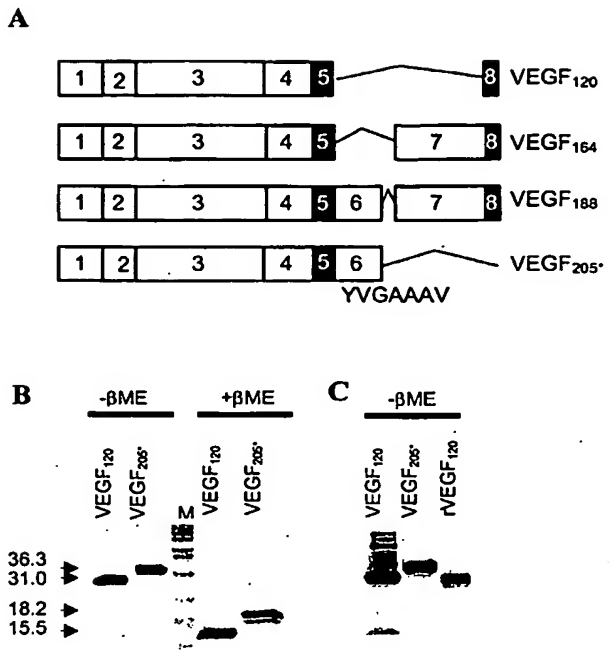

A
1 2 3 4 5 8 VEGF120
1 2 3 4 5 7 8 VEGF164
1 2 3 4 5 6 7 8 VEGF188
1 2 3 4 5 6 VEGF205
YVGAAAV
B
-βME
+βME
VEGF120
VEGF205
M
VEGF120
VEGF205
36.3
31.0
18.2
15.5
C
-βME
VEGF120
VEGF205
rVEGF120

FIGURE 1

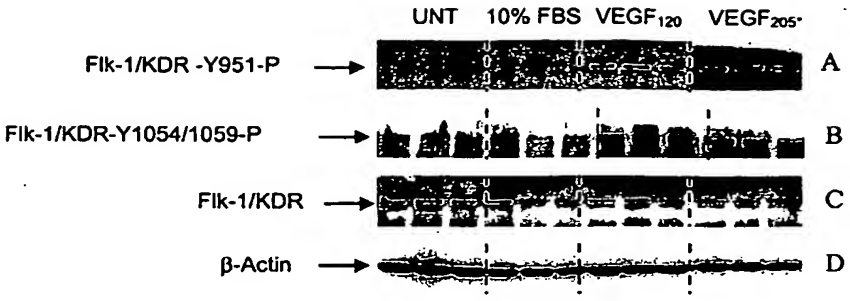

UNT
10% FBS
VEGF120
VEGF205
Flk-1/KDR -Y951-P
A
Flk-1/KDR-Y1054/1059-P
B
Flk-1/KDR
C
β-Actin
D

FIGURE 2

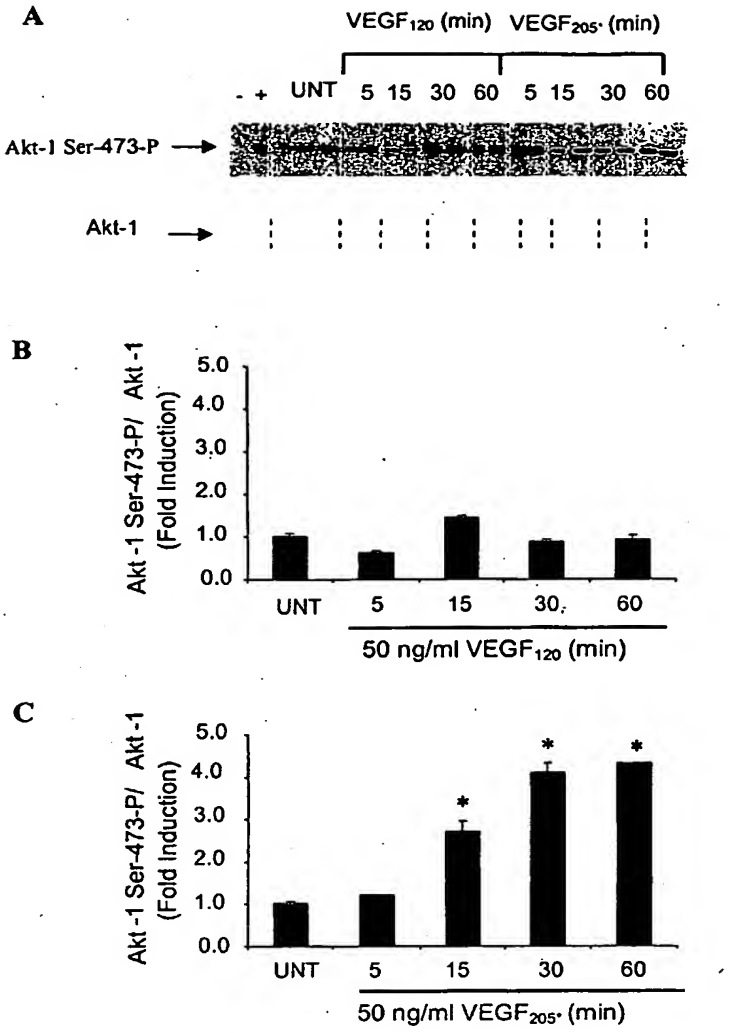
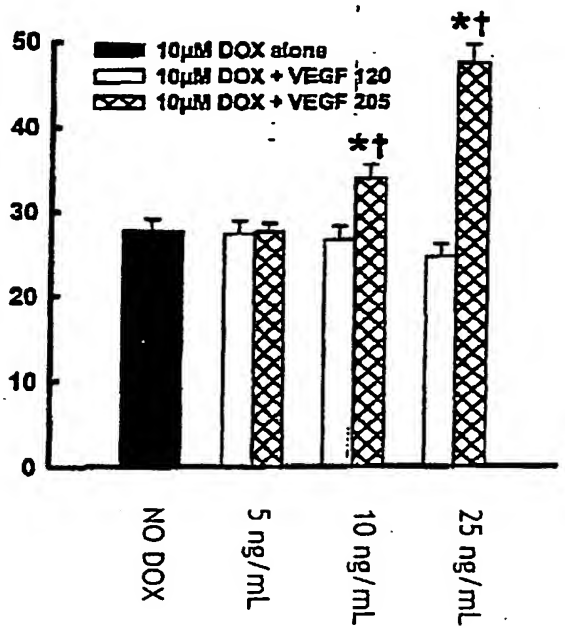

A
VEGF120 (min)
VEGF205 (min)
- + UNT 5 15 30 60 5 15 30 60
Akt-1 Ser-473-P
Akt-1
B
Akt -1 Ser-473-P/ Akt -1 (Fold Induction)
5.0
4.0
3.0
2.0
1.0
0.0
UNT 5 15 30 60
50 ng/ml VEGF120 (min)
C
Akt -1 Ser-473-P/ Akt -1 (Fold Induction)
5.0
4.0
3.0
2.0
1.0
0.0
*
*
*
UNT 5 15 30 60
50 ng/ml VEGF205 (min)

FIGURE 3



*,p<0.05 versus 10μM DOX alone

†,p<0.05 versus equimolar VEGF 120

FIGURE 4

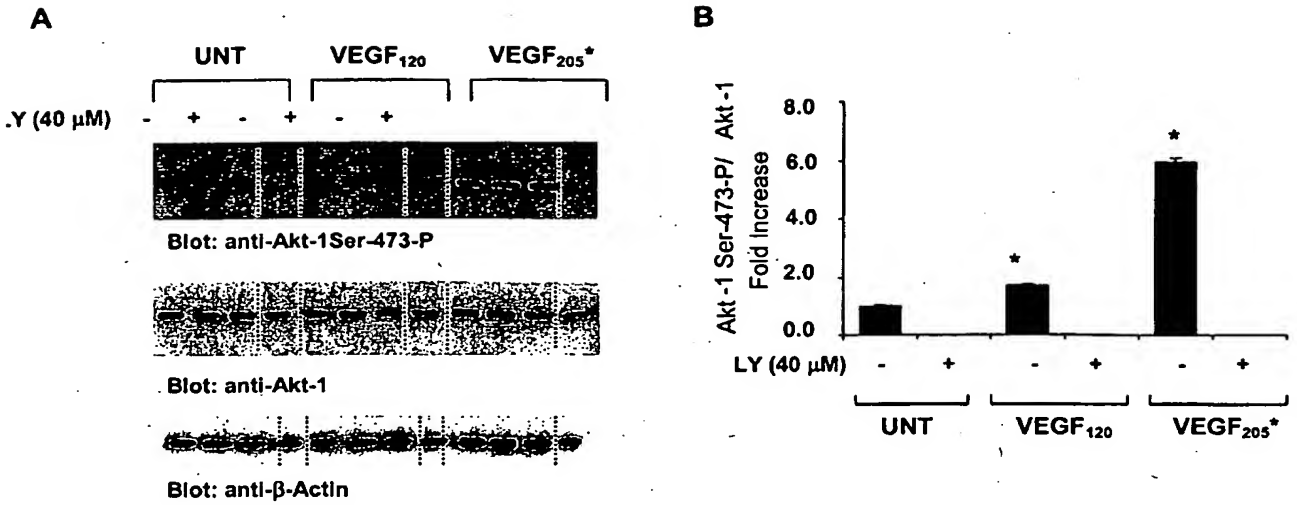

A
UNT
VEGF120
VEGF205*
LY (40 μM) - + - + - +
Blot: anti-Akt-1Ser-473-P
Blot: anti-Akt-1
Blot: anti-β-Actin
B
Akt-1 Ser-473-P/ Akt-1 Fold Increase
8.0
6.0
4.0
2.0
0.0
LY (40 μM) - + - + - +
UNT
VEGF120
VEGF205*

FIGURE 5

VEGF 205: MNFLLSWVHWTLALLLYLHHAKWSQAAPTTEGEQKSHEVI
VEGF 188: MNFLLSWVHWTLALLLYLHHAKWSQAAPTTEGEQKSHEVI
VEGF 164: MNFLLSWVHWTLALLLYLHHAKWSQAAPTTEGEQKSHEVI
VEGF 144: MNFLLSWVHWTLALLLYLHHAKWSQAAPTTEGEQKSHEVI
VEGF 120: MNFLLSWVHWTLALLLYLHHAKWSQAAPTTEGEQKSHEVI

VEGF 205: KFMDVYQRSYCRPIETLVDIFQEYPDEIEYIFKPSCVPLM
VEGF 188: KFMDVYQRSYCRPIETLVDIFQEYPDEIEYIFKPSCVPLM
VEGF 164: KFMDVYQRSYCRPIETLVDIFQEYPDEIEYIFKPSCVPLM
VEGF 144: KFMDVYQRSYCRPIETLVDIFQEYPDEIEYIFKPSCVPLM
VEGF 120: KFMDVYQRSYCRPIETLVDIFQEYPDEIEYIFKPSCVPLM

VEGF 205: RCAGCCNDEALECVPTSESNITMQIMRIKPHQSQHIGEMS
VEGF 188: RCAGCCNDEALECVPTSESNITMQIMRIKPHQSQHIGEMS
VEGF 164: RCAGCCNDEALECVPTSESNITMQIMRIKPHQSQHIGEMS
VEGF 144: RCAGCCNDEALECVPTSESNITMQIMRIKPHQSQHIGEMS
VEGF 120: RCAGCCNDEALECVPTSESNITMQIMRIKPHQSQHIGEMS

VEGF 205: FLQHSRCECRPKKDRTKPEKKSVRGKGKGQKRKRKKSRFK
VEGF 188: FLQHSRCECRPKKDRTKPEKKSVRGKGKGQKRKRKKSRFK
VEGF 164: FLQHSRCECRPKKDRTKPE[redacted]
VEGF 144: FLQHSRCECRPKKDRTKPEKKSVRGKGKGQKRKRKKSRFK
VEGF 120: FLQHSRCECRPKKDRTKPE[redacted]

VEGF 205: SWSV[redacted]
VEGF 188: [redacted]
VEGF 164: [redacted]
VEGF 144: SWSV[redacted]

VEGF 188: [redacted]

FIGURE 6

```
                                ATG AAC TTT CTG CTG TCT TGG GTG CAC TGG AGC CAG CGT TTC  42
                                M   N   F   L   L   S   W   V   H   W   T   L   A   L  14

CTG CTG TAC CTC CAC CAT GCC AAG TCG TGG CAG GCT GCA CCC ACG ACA GAA GGA GAG CAG 102
L   L   Y   L   H   H   A   K   W   S   Q   A   A   P   T   T   E   G   E   Q  34

AAG TCC CAT GAA GTG ATC AAG TTC ATG GAT GTC TAC CAG CGA AGC TAC TGC CGT CCG ATT 162
K   S   H   E   V   I   K   F   M   D   V   Y   Q   R   S   Y   C   R   P   I  54

GAG ACC CTG GTG GAC ATC TTC CAG GAG TAC CCC GAC GAG ATA GAG TAC ATC TTC AAG CCG 222
E   T   L   V   D   I   F   Q   E   Y   P   D   E   I   E   Y   I   F   K   P  74

TCC TGT GTG CCG CTG ATG CGC TGT GCA GGC TGC TGT AAC GAT GAA GCC CTG GAG TGC GTG 282
S   C   V   P   L   M   R   C   A   G   C   C   N   D   E   A   L   E   C   V  94

CCC ACG TCA GAG AGC AAC ATC ACC ATG CAG ATC ATG CGG ATC AAA CCT CAC CAA AGC CAG 342
P   T   S   E   S   N   I   T   M   Q   I   M   R   I   K   P   H   Q   S   Q  114

CAC ATA GGA GAG ATG AGC TTC CTA CAG CAC AGC AGA TGT GAA TGC AGA CCA AAG AAA GAC 402
H   I   G   E   M   S   F   L   Q   H   S   R   C   E   C   R   P   K   K   D  134

AGA ACA AAG CCA GAA AAA AAA TCA GTT CGA GGA AAG GGA AAG GGT CAA AAA CGA AAG CGC 462
R   T   K   P   E   K   K   S   V   R   G   K   G   K   G   Q   K   R   K   R  154

AAG AAA TCC CGG TTT AAA TCC TGG AGC GTG TAC GTT GGT GCC GCT GCT GTC TAA TTC CTT 522
K   K   S   R   F   K   S   W   S   V   Y   V   G   A   A   A   V   *          174
```

FIGURE 7

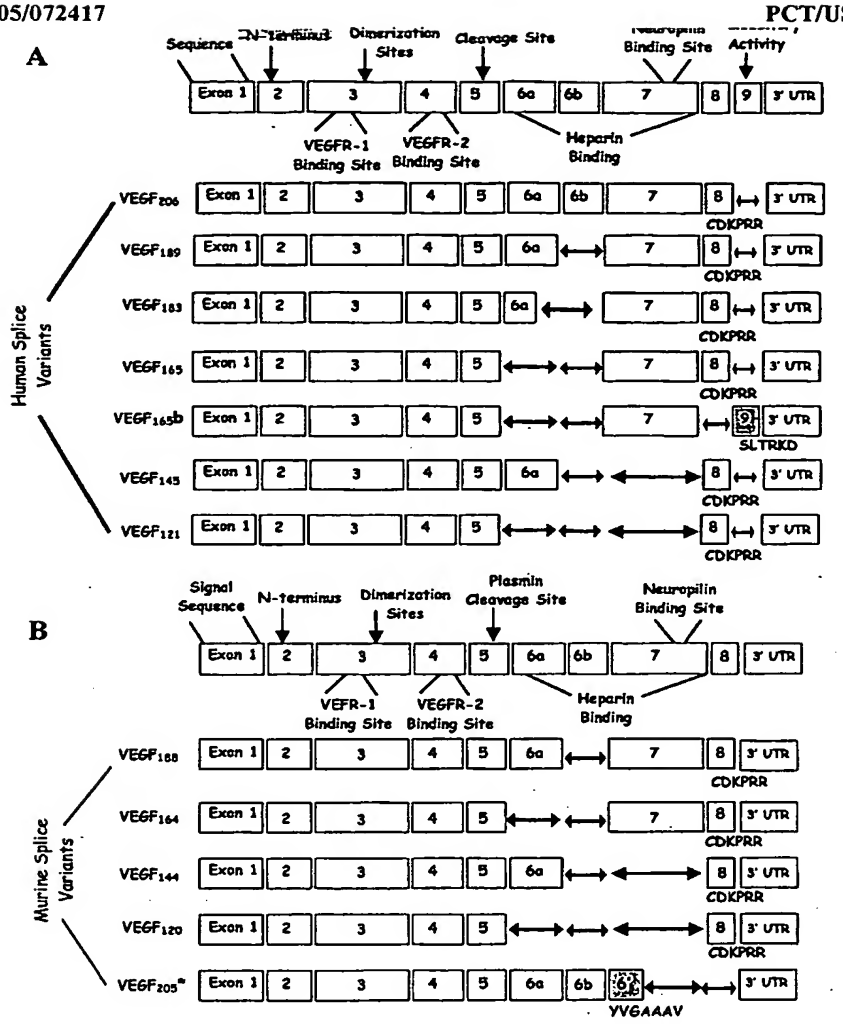

A
Sequence
N-terminus
Dimerization Sites
Cleavage Site
Binding Site
Activity
Exon 1
2
3
4
5
6a
6b
7
8
9
3' UTR
VEGFR-1 Binding Site
VEGFR-2 Binding Site
Heparin Binding
Human Splice Variants
VEGF206
VEGF189
VEGF183
VEGF165
VEGF165b
VEGF145
VEGF121
CDKPRR
SLTRKD
B
Signal Sequence
N-terminus
Dimerization Sites
Plasmin Cleavage Site
Neuropilin Binding Site
VEFR-1 Binding Site
VEGFR-2 Binding Site
Heparin Binding
Murine Splice Variants
VEGF188
VEGF164
VEGF144
VEGF120
VEGF205*
YVGAAAV

FIGURE 8

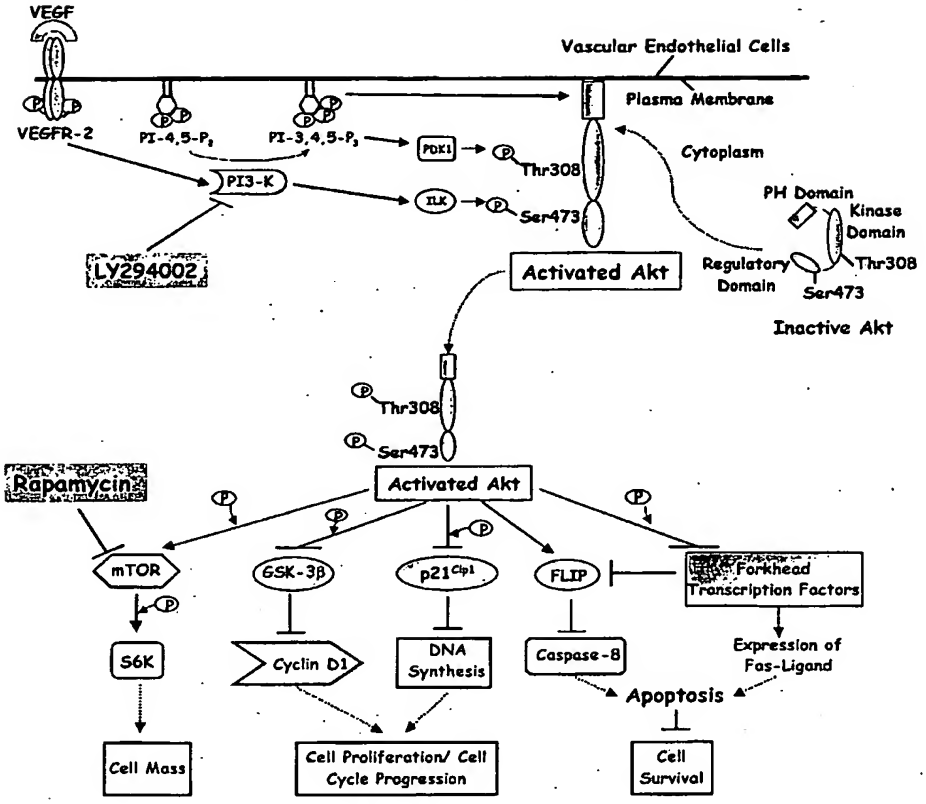
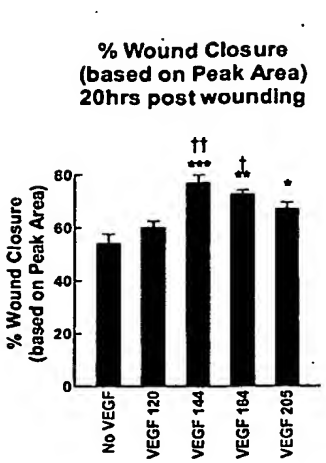
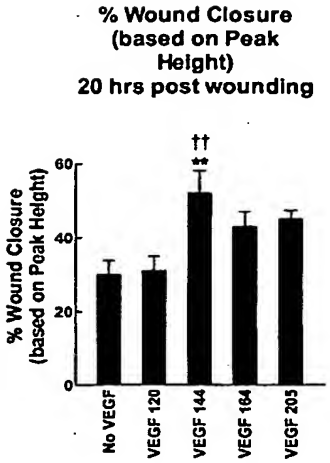

VEGF
Vascular Endothelial Cells
Plasma Membrane
VEGFR-2
PI-4,5-P2
PI-3,4,5-P3
PDK1
Thr308
Cytoplasm
PI3-K
ILK
Ser473
PH Domain
Kinase Domain
LY294002
Activated Akt
Regulatory Domain
Thr308
Ser473
Inactive Akt
Thr308
Ser473
Rapamycin
Activated Akt
mTOR
GSK-3β
p21Cip1
FLIP
Forkhead Transcription Factors
S6K
Cyclin D1
DNA Synthesis
Caspase-8
Expression of Fas-Ligand
Apoptosis
Cell Mass
Cell Proliferation/ Cell Cycle Progression
Cell Survival

FIGURE 9



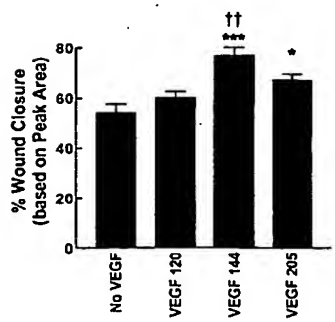
* Different from No VEGF ($p < 0.05$)
** Different from No VEGF ($p < 0.01$)
*** Different from No VEGF ($p < 0.001$)
† Different from VEGF 120 ($p < 0.05$)
†† Different from VEGF 120 ($p < 0.01$)

One-Way ANOVA with Newman Keuls multiple comparison test



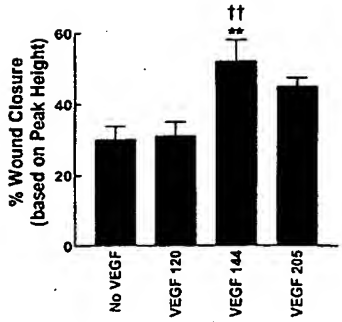
* Different from No VEGF ($p < 0.05$)
** Different from No VEGF ($p < 0.01$)
†† Different from VEGF 120 ($p < 0.01$)

One-Way ANOVA with Newman Keuls multiple comparison test



* Different from No VEGF ($p < 0.05$)
*** Different from No VEGF ($p < 0.001$)
†† Different from VEGF 120 ($p < 0.01$)

One-Way ANOVA with Newman Keuls multiple comparison test



** Different from No VEGF ($p < 0.01$)
†† Different from VEGF 120 ($p < 0.01$)

One-Way ANOVA with Newman Keuls multiple comparison test

FIGURE 10

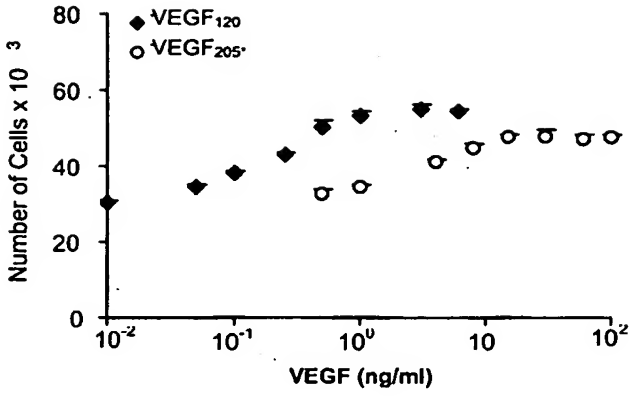

80
60
40
20
0
VEGF120
VEGF205
Number of Cells x 10 3
10-2
10-1
100
10
102
VEGF (ng/ml)

FIGURE 11

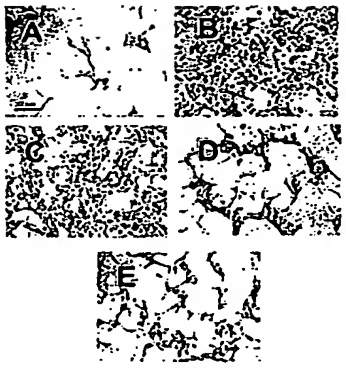


FIGURE 12

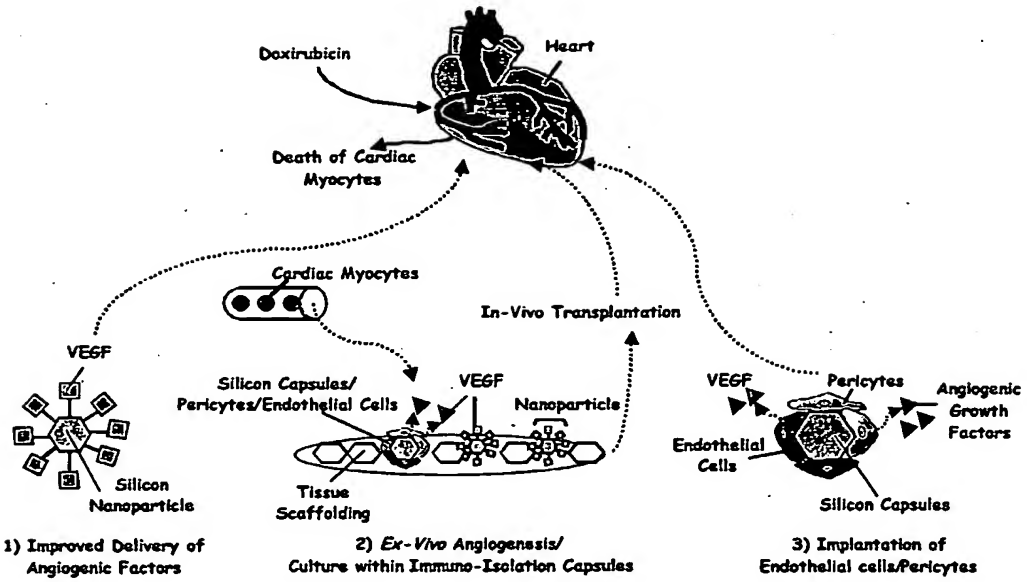

Doxirubicin
Heart
Death of Cardiac Myocytes
Cardiac Myocytes
In-Vivo Transplantation
VEGF
Silicon Capsules/ Pericytes/Endothelial Cells
VEGF
Nanoparticle
VEGF
Pericytes
Angiogenic Growth Factors
Endothelial Cells
Silicon Nanoparticle
Tissue Scaffolding
Silicon Capsules
1) Improved Delivery of Angiogenic Factors
2) Ex-Vivo Angiogenesis/ Culture within Immuno-Isolation Capsules
3) Implantation of Endothelial cells/Pericytes

FIGURE 13